



HOSHIZAKI TECHNICAL SUPPORT TECH -TIPS

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REPLACEMENT COMPRESSORS

In Tech - Tips volume number 124, you will find reference to request for replacing older Toshiba compressors with Copeland compressors. We have good news. Testing is completed and we have issued Service Bulletins on these replacement compressors. Here's a quick update for you.

Service Bulletin number SB97-0008R covers KM-451 cuber models. The original Toshiba compressor part # 2U0068-01 can be replaced with a Copeland RSF5-0075-CAA-702 compressor. This is a standard Hoshizaki part # 444624-01. The replacement application also applies to the DCM-701U and DCM-700D cubelet dispensers. When Toshiba inventories are depleted, we will automatically substitute the Copeland compressor.

Service Bulletin number SB97-0009R covers KM-601/631/632 cuber models. The original Toshiba compressor part # 2U0043-01 can be replaced with a Copeland REK3-0125-PFV compressor. This is a standard Hoshizaki part # 434209-01. The same compressor can be substituted in the F-1101 flaker. Again, when Toshiba inventories are depleted, we will automatically substitute the Copeland compressor.

Both Copeland compressors are shipped with new start components. **The new start components must be used** with the Copeland application. The Service Bulletins include wiring diagrams however, standard compressor wiring applies to the replacement. It is always advisable to double check your wiring connections before supplying power to a new compressor installation.

Installing the Copeland compressor will require standard field modification to the piping since the connections are not located exactly in the same position. A new liquid line replacement drier is included with the compressor. On models using an oil cooler loop, the loop must be eliminated per the instructions in the Service Bulletin. Once installed, standard refrigeration practices should be used to evacuate, leak check, and recharge the unit.

A Copeland replacement will be available soon for the KM-1201 cuber. The service bulletin will be issued as soon as we have inventory in stock. We will provide you with details as soon as possible.

DCM BYPASS COOLING

The DCM-450B series cubelet dispenser is now being manufactured in our Peachtree City facility. We started production with serial number G10006F. Several changes were included in the first run. These changes are highlighted in Service Bulletin SB97-0005 dated August 12, 1997.

One change is to the bypass circuit used on the DCM-450BAE model. The bypass circuit provides liquid bypass or liquid injection cooling to the compressor. This is necessary on some R-22 compressor applications because of the higher discharge temperatures.

Originally, a bypass capillary tube was used to feed a small volume of liquid refrigerant from the liquid line to the suction line. This liquid refrigerant flashed as it entered the suction line and continually added additional cool gas to help maintain compressor

temperature. The capillary has now been changed to a temperature responsive expansion valve. The result is automatic “on demand” compressor cooling.

Switching from a continuous bypass system actually increased production under certain conditions and improved overall operating efficiency.

A Sporlan #Y1037 valve is used for this application. The OEM description and part number is: liquid injection valve # 4A0866-01. The element of the valve is attached to the discharge line and opens the valve to allow cooling on temperature rise. It is important to remember that this is a special application expansion valve. It will not interchange with a thermostatic expansion valve.

SERVICE Q & A

Question: The harvest cycle for this KM cuber is over 8 minutes long in the winter time, what can I do to correct this?

Answer: *by Danny Moore*

A longer harvest cycle in the winter is a common occurrence. To answer this question we must first look at the normal operation of the KM series.

The KM design incorporates a hot gas harvest with water assist. The harvest is temperature and time terminated. In order for a harvest to end, two things must take place:

First, as hot gas flows through the evaporator, the outlet temperature will increase. The thermistor located at the outlet of the evaporator senses the outlet temperature and responds with a change in resistance. When the outlet temperature reaches

48° F., the thermistor resistance is around 3.9 K-ohms. This resistance value signals the control board to start the harvest completion timer. This completes the temperature portion of harvest termination.

Now the defrost completion timer is in control. This timer is adjustable from 1 to 3 minutes and is factory set. The typical factory setting is 1 minute. Longer harvest will occur if the timer is adjusted up to 3 minutes. Once the timer completes its count, the harvest cycle terminates.

The real issue, is an 8 minute harvest normal under the conditions that this unit is operating in? To answer this question, check the actual unit cycle times and production against the specific model specifications provided in the Performance Data section of your Tech-Specs pocket guide. Also check to see if the completion timer is adjusted to the maximum 3 minutes. If the production and cycle times are within spec, you do not have a problem.

The longer harvest cycles in winter are normal due to colder inlet water temperatures. Colder inlet water temperatures do not allow the evaporator temperature to rise as fast. This causes a longer overall harvest cycle. The colder water does however freeze faster, so the freeze time is shorter. The combination of longer harvest and shorter freeze should provide a normal total cycle time according to specifications.

If the harvest cycle time is indeed to long and out of spec, here are the items to check. First check to assure that the evaporator is scale free and that you have adequate inlet water flow. Check to assure that the hot gas valve remains open the entire harvest cycle. If not, look for a weak solenoid coil. Check for an open thermistor which would give you a consistent 20 minute harvest. Check the discharge gas temperature at the compressor and down stream of the hot gas valve outlet, close to the evaporator feed line. The discharge temperature should be around 180° F for R-502, around 200° F for R-22, and around 170° F for R-404A. If the discharge gas is the correct temperature and the outlet is cooler, the valve may not be fully open. Also check the liquid line solenoid valve to assure that it is fully closed during harvest.

The discharge line temperature is an important check. If this temperature is cooler than normal, check the compressor amp draw and efficiency and the refrigerant charge. These checks should help you pinpoint the reason for a longer than normal harvest.

COMING NEXT MONTH...

1. New R-404A Model
2. Training Agenda
3. Service Q & A

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